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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,778	09/15/2003	Kristian R. Peschmann	RAP103.Ord	1509

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EXAMINER	
YUN, JURIE	

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/662,778	PESCHMANN, KRISTIAN R.	
	Examiner	Art Unit	
	Jurie Yun	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-114* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-114* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it consists of more than 150 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 99, and 102 are rejected under 35 U.S.C. 112, second paragraph, because it is unclear what the structural limitations are conveyed by "X-ray signature characteristic".

4. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, because it is a statement of intended use and does not further limit the structural limitations recited in the parent claim.

5. Claims 52 and 97 are rejected under 35 U.S.C. 112, second paragraph, as being vague and indefinite because it is unclear what is meant by "quadrant" with respect to the rest of the system.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-10, 20-27, 33-37, 42-48, 53-64, 74-79, 83-86, and 99-105 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peschmann (USPN 5,367,552) in view of Neale et al. (USPN 5,524,133).

8. With respect to claims 1, 8, 53, 59, 99, and 102, Peschmann discloses an apparatus for identifying an object concealed within a container, comprising: a first stage inspection system (Fig. 1-1, "Line Scanner") having an X-ray projection system (36) to generate a first set of data; a plurality of processors (42) in data communication with the first stage inspection system wherein the processors process said first set of data to generate at least one image; a means for identifying at least one target region from the image; a means for positioning an inspection region relative to the target region wherein the inspection region at least partially physically coincides with the target region; and a second stage inspection system (24) for generating the inspection region wherein the second stage inspection system produces a second set of data having an X-ray signature characteristic of the material in said inspection region. Peschmann also teaches a processor executing an algorithm for selecting a region associated with the image (column 3, lines 59+), and an array of transmission detectors (50) in the second stage. Peschmann discloses all of the elements except for the first stage inspection system having at least two X-ray projection systems to generate the first set of data. Neale et al. disclose a first stage inspection system (Fig. 5) having at least two X-ray projection systems (24 & 26) to generate the first set of data. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Peschmann first stage inspection system to include at least two X-ray projection

systems, to allow for discrimination on the basis of atomic number between materials exposed to the X-rays, as taught by Neale et al.

9. With respect to claims 2 and 3, Peschmann discloses the threat is at least one of an illegal drug, an explosive material, or a weapon (abstract).

10. With respect to claims 4-6, 54, 55, and 58, Peschmann discloses (column 2, lines 13-31) the means for identifying at least one target region comprises an operator selecting a region associated with each of the images, wherein the operator selects a region based upon an X-ray image characteristic, wherein the X-ray image characteristic is at least one of mass, degree of attenuation, area, atomic number, size, shape, pattern, or context.

11. With respect to claims 7, 56, 57, and 63, Neale et al. disclose the operator identifies a region in a first image as likely to be the same, or closely located to it, in a second image (column 5, lines 61+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the Peschmann apparatus to allow for an operator to identify a region in a first image as likely to be the same, or closely located to it, in a second image, because this would provide for more accuracy than use of just one image, which would save overall inspection time.

12. With respect to claims 9, 10, 60-62, 64, 100, and 101, Peschmann discloses the region associated with the images is selected based upon an X-ray image characteristic, wherein the X-ray image characteristic is at least one of mass, degree of attenuation, area, atomic number, size, shape, pattern, or context (column 2, lines 13-15). It would be obvious to do this for each of the images.

13. With respect to claims 20 and 21, Peschmann discloses the second stage inspection system (24) comprises an inspection region generation system comprising a source of X-ray radiation (46).

14. With respect to claims 22, 74, and 103, Peschmann discloses the inspection region generation system comprises an energy dispersive detector (column 2, lines 48-51).

15. With respect to claims 23, 26, 75, and 78, Peschmann discloses the inspection region generation system comprises an array of transmission detectors in a ring formation (50).

16. With respect to claims 24 and 76, Peschmann discloses the inspection region generation system comprises an energy dispersive detector (column 2, lines 48-51) and an array of transmission detectors (50).

17. With respect to claims 25, 77, and 104, Peschmann discloses (column 13, lines 58+) the energy dispersive detector is used to produce a signature of the material in the inspection region and the array of transmission detectors is used to produce data defining at least one of mass, degree of attenuation, area, average atomic number, of the material in a beampath.

18. With respect to claims 27, 79, and 105, Peschmann discloses the array of transmission detectors comprises high energy and low energy detectors (column 10, lines 48+).

19. With respect to claims 33, 34, and 83, Peschmann discloses data generated from the transmission detectors is used to identify a boundary of the container and the data is used to generate an image (column 2, lines 24+).

20. With respect to claims 35-37 and 84-86, Peschmann discloses the X-ray signature characteristic is a diffraction pattern or a scatter spectrum or an electronic response signal (column 12, lines 52+).

21. With respect to claims 42-48, Peschmann discloses use of a CT scanner, and since the inspection area of a CT scanner is round, it will inherently include portions external to a square or rectangular container. The composite signal will inherently include portions of the container, volume within the container and volume external to the container. Also, calibration is well known to one of ordinary skill in the art to correct for effects such as beam hardening.

22. Claims 11-14, 18, 65-68, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peschmann (USPN 5,367,552) in view of Neale et al. (USPN 5,524,133) as applied to claims 1 and 53 above, and further in view of Annis et al. (USPN 6,628,745 B1).

23. With respect to claims 11-14 and 65-68, Peschmann discloses determining a region of interest in the CT scanner based on data acquired by the line scanner, but fails to disclose physically moving the object three-dimensionally. Annis et al. teach this (see Fig. 10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide for precise positioning means to better image the target, because that is what is taught by Peschmann.

24. With respect to claims 18 and 72, Annis et al. disclose the means for positioning the inspection region relative to the target region comprises a conveyor (20) operable to move in elevation relative to the second stage inspection system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Peschmann/Neale et al. to have a conveyor operable to move in elevation, to provide for more precise positioning means relative to the source.

25. Claims 15-17, 19, 69-71, and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peschmann (USPN 5,367,552) in view of Neale et al. (USPN 5,524,133) as applied to claims 1 and 53 above, and further in view of Harding et al. (USPN 5,265,144).

26. With respect to claims 15-17, 19, 69-71, and 73, Peschmann/Neale et al. do not disclose means for positioning an inspection region relative to the target region includes a plurality of adjustable apertures which can be physically moved in the direction of the main beam axis, wherein the aperture is a ring aperture having an adjustable diameter. Harding et al. disclose means for positioning an inspection region relative to the target region includes a plurality of adjustable apertures which can be physically moved in the direction of the main beam axis, wherein the aperture is a ring aperture having an adjustable diameter (Figs. 1a & 1b). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a plurality of adjustable apertures which can be physically moved in the direction of the main beam axis, wherein the aperture is a ring aperture having an adjustable diameter, in the Peschmann/Neale et

al. apparatus, to enable scatter analysis which can be used to detect specific compositions.

27. Claims 28-32, 80-82, and 106-108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peschmann (USPN 5,367,552) in view of Neale et al. (USPN 5,524,133) as applied to claims 1, 53, and 102 above, and further in view of Sones et al. (USPN 4,789,930)

28. With respect to claims 28-32, 80-82, and 106-108, Peschmann/Neale et al. do not disclose data generated from the transmission detectors is used to identify a reference spectrum, wherein identification of a reference spectrum is achieved by identifying a spectrum associated with data generated from both the high energy detectors and the low energy detectors, wherein the second set of data comprises high energy and low energy transmission data characteristic of the X-ray properties of the material in a beampath, wherein the reference spectrum is used to correct for beam hardening. Sones et al. disclose data generated from the transmission detectors is used to identify a reference spectrum, wherein identification of a reference spectrum is achieved by identifying a spectrum associated with data generated from both the high energy detectors and the low energy detectors, wherein the second set of data comprises high energy and low energy transmission data characteristic of the X-ray properties of the material in a beampath, wherein the reference spectrum is used to correct for beam hardening (column 4, lines 17+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to identify a reference spectrum associated with data generated from both the high energy detectors and the

low energy detectors, in the Peschmann/Neale et al. apparatus, to correct for beam hardening, resulting in better image detection.

29. Claims 49-51, 94-96, and 98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peschmann (USPN 5,367,552) in view of Neale et al. (USPN 5,524,133) as applied to claims 1 and 53 above, and further in view of McGann et al. (USPN 5,263,075).

30. With respect to claims 49-51, 94-96, and 98, Peschmann/Neale et al. do not disclose at least four energy dispersive detectors separated by a plurality of vanes. McGann et al. disclose at least four energy dispersive detectors (Fig. 1, 32) separated by a plurality of vanes (34). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Peschmann/Neale et al. apparatus to include in the second stage inspection system, at least four energy dispersive detectors separated by a plurality of vanes, to enhance detection of materials such as explosives or drugs.

31. Claims 38-41, 87-93, and 109-114 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peschmann (USPN 5,367,552) in view of Neale et al. (USPN 5,524,133) as applied to claims 1 and 53 above, and further in view of Mayo et al. (USPN 6,118,850).

32. With respect to claims 38-41, 87-93, and 109-114, Peschmann/Neale et al. do not disclose a processor in data communication with an inspection system wherein the processor is capable of executing a neural network to process a set of data to determine the existence of a threat; the neural network operates as a back-propagation

network having a plurality of nodes and wherein said nodes are organized in a series of successive layers, each layer comprising at least one node that receives inputs from nodes in a prior layer and transmits outputs to nodes in a subsequent layer; the nodes in a first layer are weighted in accordance with their distance from at least one node in a second layer, and the neural network is trained to determine the existence of the threat using a library of known threats. Mayo et al. disclose (column 15, lines 1+) a processor in data communication with an inspection system wherein the processor is capable of executing a neural network to process a set of data to determine the existence of a threat. The neural network operates as a back-propagation network having a plurality of nodes and wherein said nodes are organized in a series of successive layers, each layer comprising at least one node that receives inputs from nodes in a prior layer and transmits outputs to nodes in a subsequent layer. The nodes in a first layer are weighted in accordance with their distance from at least one node in a second layer, and the neural network is trained to determine the existence of the threat using a library of known threats. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a back-propagation neural network in the Peschmann/Neale et al. apparatus in the first stage or second stage inspection system, to facilitate threat detection and analysis. Mayo et al. do not specifically disclose at least one library of non-threats, but it would be obvious to one of ordinary skill in the art to use this to better train the network in threat detection and analysis.

Conclusion

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jurie Yun whose telephone number is 571 272-2497. The examiner can normally be reached on Monday-Friday 8:30-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jurie Yun
August 25, 2004

Craig E Church

Craig E. Church
Primary Examiner